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QUERY BY PROF. A. HALL.—(1). If v be the potential function we have the equation given by Laplace

$$\frac{d^2v}{dx^2} + \frac{d^2v}{dy^2} + \frac{d^2v}{dz^2} = 0,$$

which holds for a point outside the attracting body. For a point inside this body we have the equation given by Poisson,

$$\frac{d^2v}{dx^2} + \frac{d^2v}{dy^2} + \frac{d^2v}{dz^2} = -4\pi\rho.$$

What is the value of the right hand side of this equation for a point on the surface of the attracting body? Moigno says, "in this case the expression will have in reality eight distinct values." Statics, p. 460.

(2) Given a hemispherical dome turning about a pin at the top, and having a slit extending from the horizon to the zenith. Can a telescope be placed inside this dome in such a position that every point of the heavens can be seen through the telescope?

QUERY BY T. W. WRIGHT, U. S. LAKE SURV. DETROIT, MICH.—Can a satisfactory proof be given of the statement that "the weight of an observation varies as the square of the probability of its accuracy"? (Monthly Notices R. A. S., Vol. XIII.)

QUERY BY PROF. WM. WOOLSEY JOHNSON, ANNAPOLIS, MD.—"It is stated in Brande and Cox' Dictionary of Sc. and Lit., with respect to Fermat's 'lost theorem', viz.: that $x^n + y^n = z^n$ is insoluble in integers except when $n = 2$, that no complete demonstration has yet been given. Yet Barlow in his Theory of Numbers gives what professes to be a demonstration of the impossibility of the equivalent equation $x^n - y^n = z^n$, p. 164.

What is the fallacy in Barlow's demonstration and by whom was it first exposed?"

PROBLEMS.

313. *By Prof. De Volson Wood.*—A piston, weight w, is dropped into the end of a vertical cylinder filled with air, length l; how far will the piston descend, assuming no friction nor escape of air, nor heat from the compressed air?

314. *By Prof. L. G. Barbour, Richmond, Ky.*—A helix is coiled about a right cylinder the radius of whose base is 1. The projection of the evolute of the helix on the plane of the base of the cylinder encloses double the area of that base. Required the angle made with the plane of the base by the tangent to the helix.